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(54) Locking device

(57) A locking device (e.g. for use as a vehicle steering lock) has a locking bolt 3 operable by a plastic card encoded key inserted into chamber 10. A latch (not shown) is provided to retain the locking bolt in a locked position (shown) until a sensor 16 reads and verifies information stored on the encoded key as the key is inserted. A solenoid then disengages the catch to allow the key to operate the locking bolt by pushing a member 9 which causes a cam 6 to rotate on axis 5 and engage a bolt projection 7.

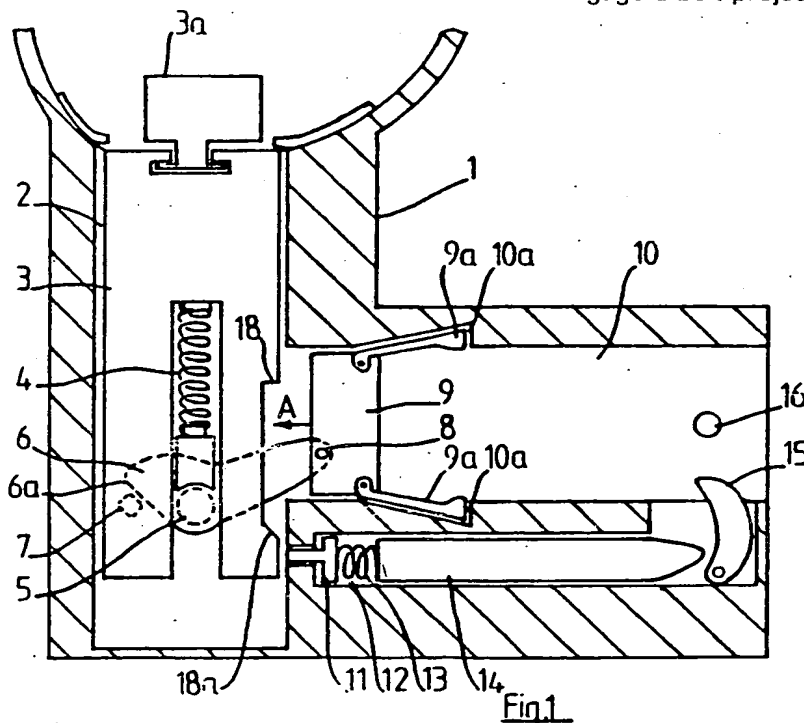
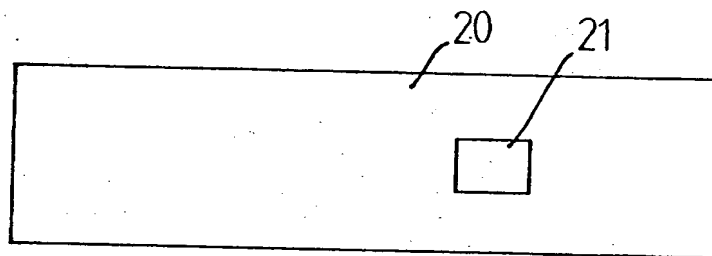
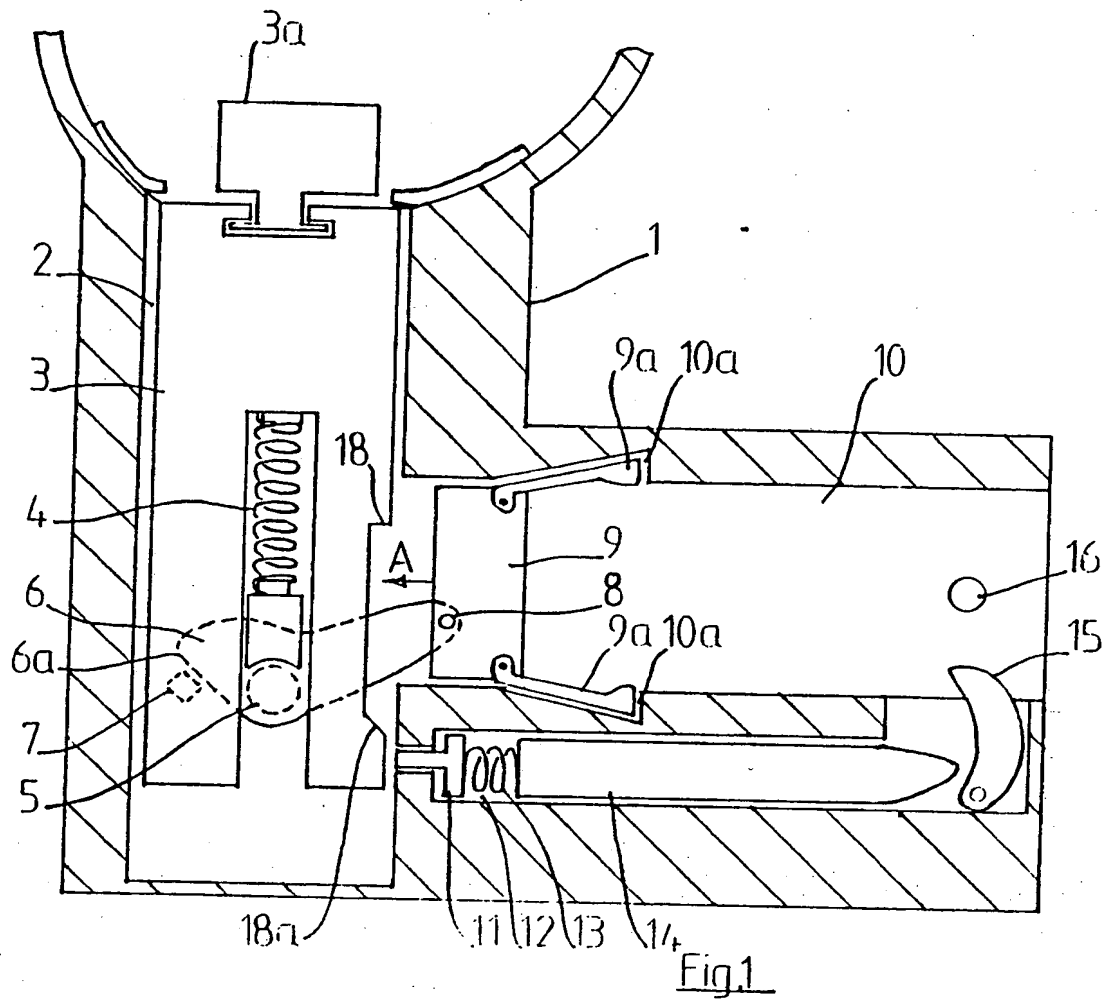
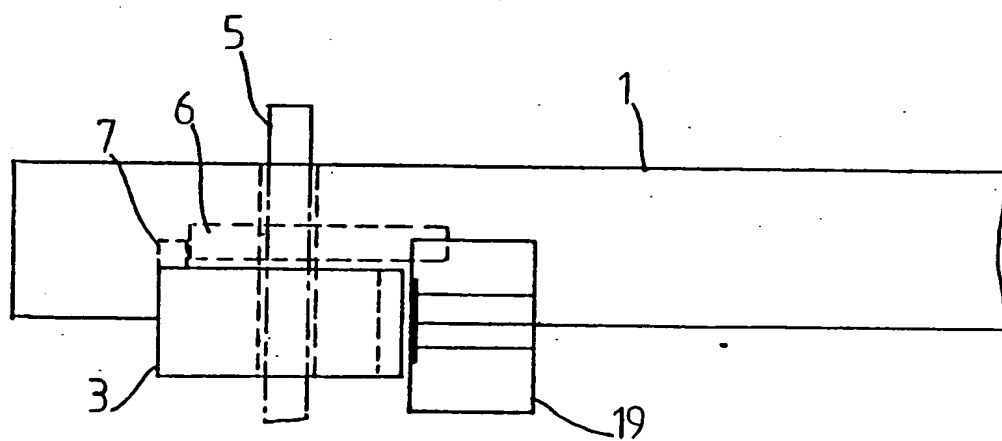
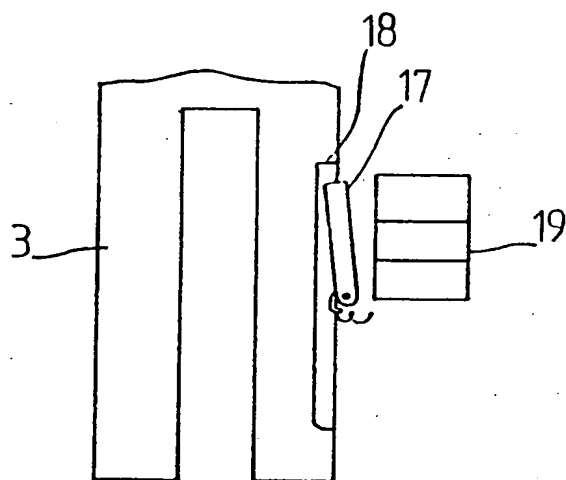
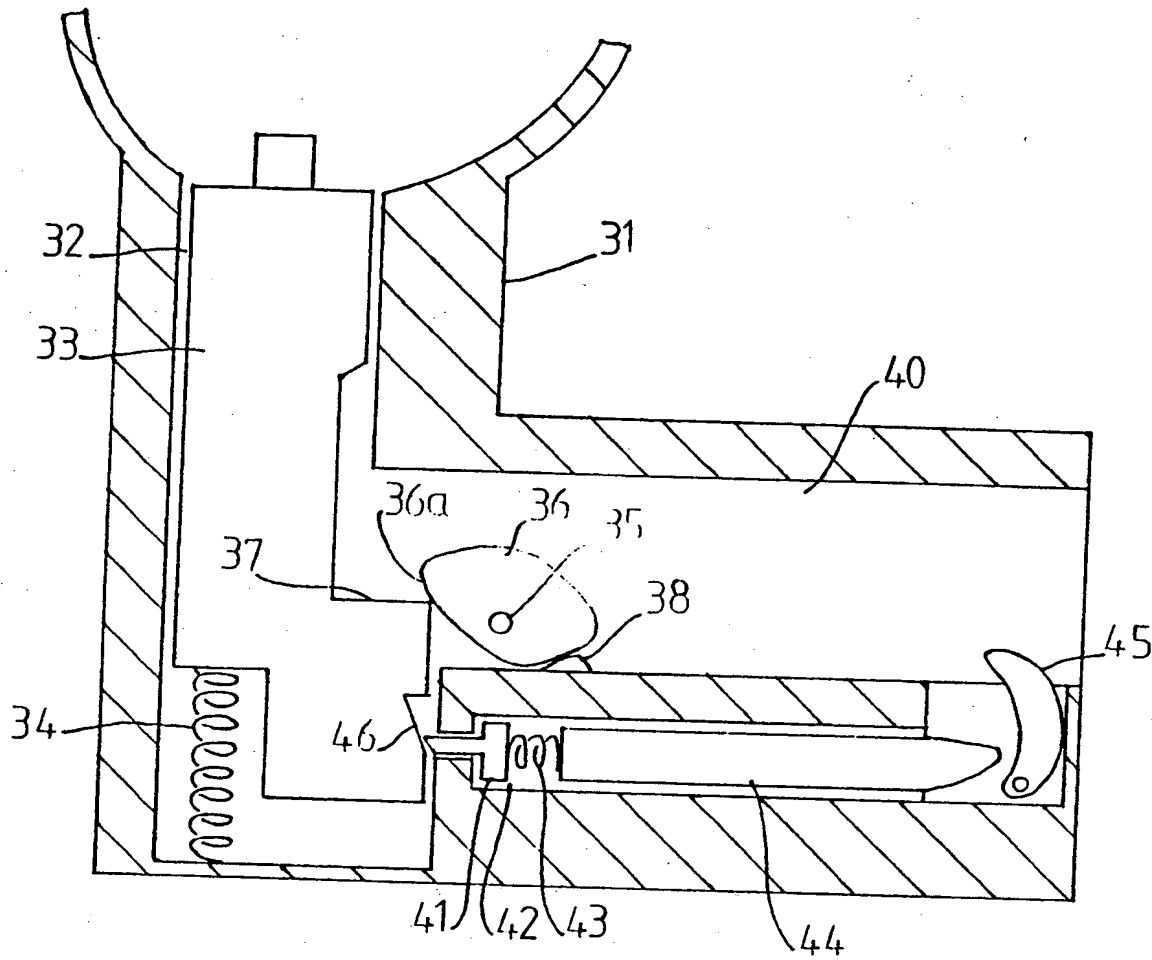


Fig.1

The drawing(s) originally filed was/were informal and the print here reproduced is taken from a later filed formal copy.



Fig. 2Fig. 3

Fig.5

SPECIFICATION

Locking device

5 This invention relates to a locking device for use as a steering lock for vehicles.

Steering locks are an important feature on vehicles and various different types of steering locks have been previously proposed. Proposals have been made of steering lock mechanisms in which, for increased security, the lock mechanism is operated by an electronically coded plastics key card.

While such an electronically operated lock increases security compared to conventional mechanical key operated locks there are difficulties in ensuring that such locks conform to safety regulations which determine that steering locks cannot engage when a vehicle is in motion.

According to the present invention there is provided a locking device comprising a locking bolt movable between a first, locked position and a second unlocked position, key means operable so as to move the locking bolt between its locked and unlocked positions, wherein a catch is provided which in a first position engages the locking bolt to retain the locking bolt in the locked position, sensor means being provided to read information stored on the key means and to operate the catch such that the catch moves to a second position in which the catch is disengaged from the locking bolt so that the key means may be operated to move the locking bolt.

Preferably, the catch is solenoid operated.

Preferably also, the key means is slidable in the locking mechanism to operate a cam member which engages the locking bolt to move it from its locked to its unlocked position.

Preferably also, the locking bolt is resiliently biased towards its locked position so that it returns to its locked position on removal of the key means from the lock mechanism.

Preferably also, retaining means are provided to retain the locking bolt in its unlocked position once the locking bolt has been moved to the unlocked position while the key means is engaged in the locking device.

Preferably also, the key means is a plastics material key card.

Preferably also, the key means has an electrically encoded area for storing information to be read by the sensor means.

Preferably also, retaining members are provided which are biased towards the key means on engagement of the key means in the locking device so as to retain the key means in the locking device.

Preferably also, the locking bolt is a steering lock for a vehicle.

Preferably also, the cam member is mounted on a shaft which rotates with the cam member to operate the ignition switch of a vehicle.

Embodiments of the present invention will now be described, by way of example, with reference to the accompanying drawings, in which:

70 Fig. 1 is a sectional side view of a locking device in accordance with the present invention;

Fig. 2 is a plan view of part of the locking device of Fig. 1;

75 Fig. 3 is a side view of part of the locking device of Fig. 1;

Fig. 4 is a side view of a key card for the locking device of Fig. 1; and

80 Fig. 5 is a sectional side view of a second embodiment of a locking device.

Referring to Figs. 1 to 4 of the drawings, a locking device comprises a casing 1, having a chamber 2 in which a locking bolt assembly 3 is slidably mounted. The locking bolt assembly 3 is resiliently biased towards a locking position, as illustrated in Fig. 1, by a spring 4 which engages a pivot shaft 5 in the casing 1. A cam member 6 is mounted on the shaft 5. A projection 7 on the bolt assembly 3 is engaged in use by a bearing surface 6a on the cam 6. A projection 8 on the cam 6 is slidable in a groove in an intermediate member 9 which is slidably mounted in a key chamber 10 in the casing 1. A pair of retaining members 9a are pivotally mounted on the intermediate member 9 and engage cut-outs 10a in the casing 1 adjacent the chamber 10.

A locking member 11 is slidably mounted in a guideway 12 in the casing 1 and is biased towards the chamber 2 by a coiled spring 13 and a thrust member 14 which is acted on by a cam 15 pivotally mounted in the guideway 13 and which extends into the chamber 10 in the casing 1.

105 A sensor 16 is mounted in the casing 1 at the side of the chamber 10.

A catch member 17 is pivotally mounted in the casing 1 and in use engages a cut-out 18 in the bolt assembly 3, as illustrated in Fig. 3.

110 A solenoid 19 is provided to operate the catch member 17.

A plastics material key card 20 is provided for the locking device. The key card 20 has an electrically encoded area 21.

115 In use, the locking device is used as a steering lock for a motor vehicle with a projection 3a on the bolt assembly 3 engaging the steering column of the vehicle.

To disengage the steering lock the key card 20 is inserted into the key chamber 10 so that it engages the intermediate member 9. The sensor 16 reads the encoded area 21 on the key 20 and, if the code is correct, causes the solenoid 18 to operate to disengage the catch member 1 from the cut-out in the bolt assembly 3.

The key card 20 is now moved along the key chamber 10 to cause the intermediate member 9 to move in the direction of arrow A. The projection 8 on the cam 6 moves

1. A locking device comprising a locking
125 bolt movable between a first, locked position
and a second unlocked position, key means
operable so as to move the locking bolt be-
tween its locked and unlocked positions,
wherein a catch is provided which in a first
130 position engages the locking bolt to retain the

locking bolt in the locked position, sensor means being provided to read information stored on the key means and to operate the catch such that the catch moves to a second position in which the catch is disengaged from the locking bolt so that the key means may be operated to move the locking bolt.

2. A locking device as claimed in Claim 1, wherein the catch is solenoid operated.

3. A locking device as claimed in either Claim 1 or 2, wherein the key means is slidable in the locking mechanism to operate a cam member which engages the locking bolt to move it from the locked to the unlocked position.

4. A locking device as claimed in any one of the preceding Claims, wherein the locking bolt is resiliently biased towards the locked position.

5. A locking device as claimed in any one of the preceding Claims, wherein retaining means are provided to retain the locking bolt in the unlocked position once the locking bolt has been moved to the unlocked position while the key means is engaged in the locking device.

6. A locking device as claimed in any one of the preceding Claims, wherein the key means is a plastics material key card.

7. A locking device as claimed in any one of the preceding Claims, wherein the key means has an electrically encoded area for storing information to be read by the sensor means.

8. A locking device as claimed in any one of the preceding Claims, wherein retaining members are provided which are biased towards the key means on engagement of the key means in the locking device so as to retain the key means in the locking device.

9. A locking device as claimed in any one of the preceding Claims, wherein the locking bolt is a steering lock for a vehicle.

10. A locking device as claimed in any one of Claims 3 to 9, wherein the cam member is mounted on a shaft which rotates with the cam member to operate the ignition switch of a vehicle.

11. A locking device substantially as hereinbefore described with reference to Figs. 1 to 4 or Fig. 5 of the accompanying drawings.

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